

# Influence of the IEEE Spain Section in the Spanish Scientific-Technical System from 1968 to 2008: An Historical Perspective

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**Abstract**—In this paper it is presented an historical overview of the IEEE Spain section from 1968 to 2008 and the influence of the people of this Section in the Spanish scientific-technical system. The IEEE Spain Section was recognized inside Region 8 of the IEEE in April 1968. The section has had nine chairs from 1968 to 2008. Aspects as historical frames of reference in Spain and, data, facts and activities of the volunteers in different time intervals are remembered. These aspects are related with the membership, and student branches and your evolution, participation in Region 8 activities, meetings and conferences, and legal aspects affiliated with the recognized presence as professional institution in Spain.

**Keywords**—component; IEEE Spain section; frames of reference; Data, facts and activities; historical perspective

## I. INTRODUCTION

Electrical and electronics engineers of the past and Information and Communication technologists of today have played a major role in shaping the society in which we live, and are likely to play an ever greater role in the society of tomorrow. The history of the territorial sections of the IEEE is related to the socio-political events of the territory where that exist. In case of Spain, forty years passed from 1968 to 2008 included a political development and scientific-technical development in which the Spanish members of the IEEE have had an important role. Aspects such as, historical frames of reference in Spain, and data, facts and activities of the volunteers in different time intervals of these last forty years are remembered in the paragraphs that continue [1].

## II. PRELUDE (1963-1967)

This interval from 1963 to 1967 was the prelude to build and organize the new IEEE Spain section. When the new organization of the IEEE in 1963 was born, this new professional institution interested in Spain two little group of people: about five people related with the AIEE and twenty people approximately related with the IRE. That people worked in the University and some industries related with Electronics and Telecommunication engineering. Other aspects related with the political and sociological circumstances of

Spain in this period must be considered to understand the circumstances of this new professional organization of the engineering in Spain. These aspects are commented in the following.

### A. Frames of reference in Spain

A Dictatorship existed in Spain in this historical interval. The freedoms of all kinds were restricted in the above mentioned circumstances, and in Spain it could be illegal to carry out associative activities. Nevertheless, the professional associations did not have special difficulties. Other problem was related to the professionals' lack of the engineering and to the age of those who were exercising the professions related to the electrical and electronic engineering in Spain.

The industries and services with major aptitude to facilitate the interest for the IEEE membership were principally those in which there were Electrical/Electronics and Telecommunication engineers involved. Companies as Standard Electric-ITT, "Telettra España" and "Telefónica" were the entities with more scientific and technical knowledge in the Electrical/Electronics-Telecommunication fields. These companies were leading in Spain in that epoch. Research centers and universities that were devoting themselves to the electrical engineering and telecommunication only there were in Madrid and Barcelona. From the point of view of the research, the most important centers related to the electrical engineering and telecommunication were the CSIC ("Consejo Superior de Investigaciones Científicas"), "Standard Electric-ITT" and "Telettra España". Other entities in different places of Spain had a low influence in the Scientific-technical system of Spain.

### B. Data, facts and activities of the volunteers in this period

The Professor Rogelio Segovia of the ETSIT ("Escuela Técnica Superior de Ingenieros de Telecomunicación") of Madrid was the first leader of the future section IEEE Spain (1963). Prof. R. Segovia keeps in contact with the Director of Region 8 of the IEEE in 1963 and 1964 to develop the new Spanish section. Due to the leadership of Prof. R. Segovia was created the first IEEE Student Branch of Spain in the "Escuela Técnica Superior de Ingenieros de Telecomunicación" (ETSIT)

of Madrid in 1964 and the first Adviser was the Prof. Antonio Millán (Full Prof. of Radar systems in the ETSIT) of the AESS society. In that epoch, new activities were supported by the Student Branch of Madrid with about 40 people of ETSIT. A Journal was edited and published by the Student branch from 1966 to 1968 and distributed in Madrid and Barcelona. The contents were only related with technical topics. The activities of this Student branch was recognized with a "Vincent Bendix" award in 1966 (\$500), and it was the first time in Spain. The cover image of a publication is presented here in Fig. 1. This Journal had as title: "bit".



Figure 1. Image which shows the cover of the Journal "bit" in 1967.

This Prelude to constitute the IEEE Spain Section was closed in 1967 when it was constituted the first interim board of the IEEE Spain section. All officers (Chair, Secretary and Treasurer) were elected by the board itself. There was only one candidate for each position but petition candidates were allowed. The first Chair was the Prof. Rogelio Segovia (in memoriam) of ETSIT of Madrid.

### III. THE SEVENTIES (1968-1977)

This interval can be considered to be that of the "Early Beginnings". From the political point of view two situations happen in Spain: the dictatorship and the arrival of the democracy in 1976. This situation is reflected in all the aspects of the social life of Spain. On the other hand, there appear new generations better arranged to the professional institutions. Therefore, in this interval is possible to remember some frames of reference, and facts and activities of the first steps of the IEEE Spain Section.

#### A. Frames of reference in Spain

The first aspect to consider in this historical interval was the existence of the last years of the dictatorship and the new

arrival of the Democracy. Electrical/electronic industry and Telecommunication services began to take-off. New Laws (1971) changed the Education and the universities life in a positive way. Before 1975 new universities with technological curricula were created. The Democracy (newly) arrives in 1976 and more investments arrive from abroad. So, new professionals of the engineering and mathematicians and physicist were necessary in that context, and new industries, services were born. Academia with high standings was the core of the future development of the Section, because there were more professionals: engineers, physicists, mathematicians and people who might be considered to be the future members of the IEEE.

#### B. Data, facts and activities of the section

The IEEE Spain section was recognized on April 16, 1968 and your governance was achieved by the first Chair of the Section Prof. R. Segovia, a Secretary and a Treasurer. The first bylaws adequate to political situation were approved by Ministry of Internal Affairs of Spain in 1970. Prof. R. Segovia passed away in September 1971 and the new Chair was elected by the board in 1972. The new Chair of the IEEE Spain was the Prof. Andrés Lara Sanz (expert in Acoustics) from the CSIC of Madrid. This period was the maintenance of the membership (very low in number and activities) until 1977. In this interval, a second new technical school of Telecommunications in Spain was created in Barcelona (ETSETB) in 1971. In 1972 the students of ETSIT-Barcelona participate in the Student Branch of Madrid by difficulties to organize the student branch in Barcelona during the dictatorship. The membership of IEEE in Spain was principally people of Academia (Electronics, Telecommunications, and Industrial engineering) and a low membership in the Services.

### IV. THE EIGHTIES (1978-1989)

This interval may be considered as the "First Development" of the Section. In this historical period of Spain we can consider two parts: the "transition" interval (1978-1982) and the epoch of the incorporation of Spain in the place that corresponds to her in the world. Both periods were positive for the country and brought positive consequences for the social and technological developments. As consequence, the number of members of the Section increased considerably, so much in students as in members not students. Again it is necessary to consider some frames of reference, and facts and activities of the IEEE Spain Section.

#### A. Frames of reference in Spain

From 1977 after the "Acuerdos de la Moncloa" (Agreements among all political parties), Spain experiences a strong socio-economic and technological development. These aspects are the base to carry out projects of strong national interest as the celebration of the World Championship of Football and to put forward one's candidature of Barcelona and Seville for events of world repercussion (Olympic games and Expo 92). From the point of view of technological development this implied new human resources with a good technical preparation.

In addition, Spain is recognized to be a member of the EU (European Union) and NATO, which implies also transfers scientists - technical knowledge due to the participation in technical committees. This implies a major technical preparation that the Spanish engineers start possessing. Telefónica is more international and increases your human resources of engineering and scientists related to the ICT.

The need of more graduates of engineering does that to be created new Schools of Industrial Engineering and Technologies of the Information in Spain. On the other hand, the activity of research increases in an important way in ICT (Information and Communication Technologies) and increases the participation in programs of research, so much Spanish as inside the programs of the European Union. The financial resources are increased of considerable form for the research in ICT.

#### B. Data, facts and activities of the section

In 1977 elections were celebrated in the Section. A Chair from the industry was chosen by the first in the history of the Section. From 1977 until 1981, it will be Chair the Dr. J. Enríquez of Salamanca from Standard Electric-ITT. Dr. Enríquez had a board with five members in your team of volunteers. The following Chair was the Prof. Antonio Luque (Full Prof. of Electronics and expert in Photovoltaic energy) of the ETSIT in Madrid. The interval of your responsibility was from 1981 to 1983 with the more important number of officers in the history of the section. It was the first time that the officers of the section taking part in the works of the management committee of the IEEE Region 8 and some sub committees. Open elections were celebrated in the Section in 1983 and was elected the Prof. Anibal R. Figueiras. The interval of the Prof. Figueiras was from 1983 to 1993. Among the principal activities of this epoch we can remember: the preparation of the MELECON85 celebrated in Madrid in 1985, the celebration of the centenary of the IEEE in 1984 in which diverse medals were delivered to members distinguished from the Section in that epoch.

As collective activities were created four chapters by the first time: Acoustics and Signal Processing, Antennas and Propagation, Computers and Electron Devices. The second students' branch of Spain was created in Barcelona in 1980. When it was ended the year 1989 the section had near 500 members of diverse categories (Fellows, Senior, Member, Associate and Student), but with a great number of students and five Student branches were created in the last year (1989) of this interval.

### V. THE NINETIES (1990-1999)

This decade can be considered to be that of the "consolidation" of the Spanish section. Here also can be commented which have been the most important factors for the section bearing in mind that Spain was/is an open society. In what continues the most important aspects are commented under our point of view.

#### A. Frames of reference in Spain

In this decade strong foreign investments are placed in new technologies. The Olympic Games and the Expo are celebrated in 1992 and it brings the last advances in ICTs. The coming of age of the Internet and digital publications facilitates the increase of the IEEE membership in Spain. There is a strong participation in European Projects ICT and they increase the resources for electronic technologies, ICT and electrical engineering. There were an increasing of the scientist, engineers and technicians in topics related with the IEEE society, and it was due to 29 technical colleges and universities of Spain related with all topics covered by the IEEE.

#### B. Data, facts and activities of the section

In this interval, the Chairs of the section were Full Profs. of the Technical Universities of Madrid and Barcelona. The Prof. Anibal R. Figueiras (UPM) (former Prof. of the Technical University of Madrid) was followed by the Prof. Antonio Elias Fustè from the UPC (Technical University of Catalonia) in the interval from 1993 to 1996. From 1996 to 2002 was elected the first Chairwoman of the IEEE Spain section, Prof. Magdalena Salazar Palma (former Prof. of the UPM).

The section was very much active in this decade with these Chairs. The socio-economic situation of Spain facilitates activities generated by new Chapters. In fact, the section had 13 chapters in 1999. The most important chapters were: SP/COM with 1076 members, Computers with 863 members, AP/MTT with 303 and the total membership arrived to 3124 (including students). A new journal of the Student 'branch was edited and published: BURAN in 1993. The publication arrived to 2006 with papers in Spanish, English and Portuguese languages.

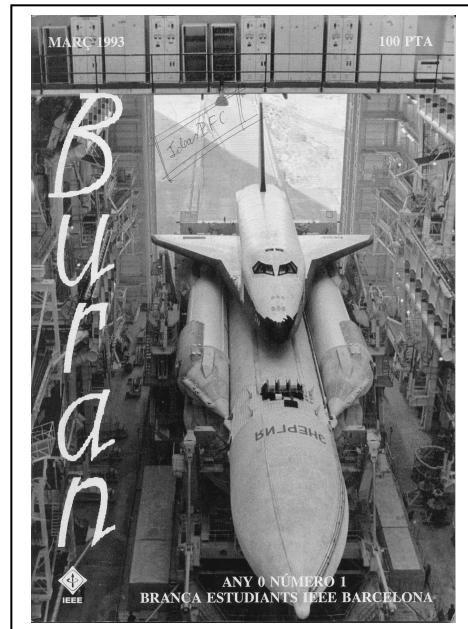


Figure 2. Image which shows the cover of the Journal "BURAN" in 1993

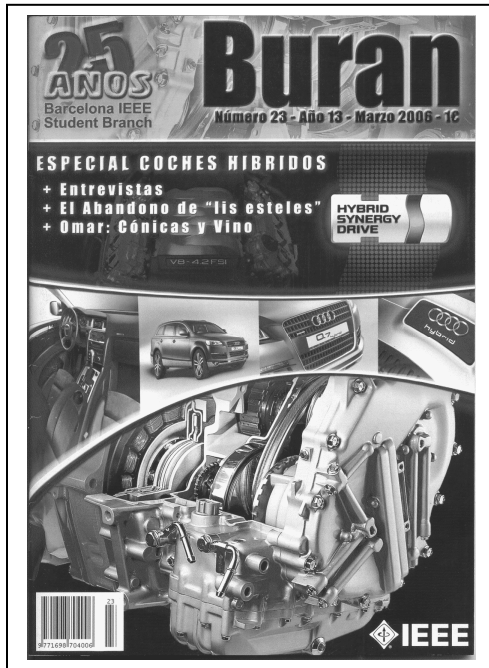


Figure 3. Image which shows the cover of the Journal "BURAN" in 2006

## VI. EARLY 21TH CENTURY (2000-2008)

The section in this early 21th century has been one of the better in Region 8 from the point of view of activities. So, So, we can consider, in short, the most important aspects to comment related with the historical frames of reference and other questions.

### A. Frames of reference for the future

The circumstances socio-economics of Spain were positive. Spain was/is a member of the "Eurozone" and it was a advantage from the financial point of view. This characteristic permitted new industries related with ICT and with foreigner's investments. In this interval, there was an increasing in research collaborative transnational. From the point of view of the research impact there was an increasing in papers published with high impact index (JCR index).

However, new problems appeared on the horizon. For example, decreasing of engineering students, financial difficulties, Crisis related with new organization of the University and the curricula (Bolonia Process) and so on. Today (2009) theses problems are more acute.

### B. Data, facts and activities of the section

The Chairs of the section in this interval were the Profs. Magdalena Salazar Palma from the "Carlos III" University of Madrid (1996-2002) and Jose A. Delgado-Penín(2002-2007) from the UPC (Technical University of Catalonia).The section

had 20 chapters in 2007 and were created GOLD and WIE affinity groups.

New bylaws adequate to Democratic situation were approved by Ministry of Internal Affairs in 2007, and these bylaws fix the new institutional location of the Section in Madrid. The Membership in 2008 was of 3700 people in all categories with retention of the membership near to 85%.

Some activities promoted during this interval were: dozens of Conferences related with all fields of IEEE, MELECON 06, meetings of Region 8, IEEE headquarters meetings in Madrid and Barcelona, etc.

## VII. CONCLUSION

Of the historical presentation of last forty years of the IEEE Spain Section some conclusions can be obtained as those who continue:

- Leadership of the section was achieved by Academic people last years.
- Student branches in Spain were/are very important for the section and during these forty years were the fuel for the activities of the section.
- New generations of volunteers were very active in the international committees and to promote Conferences and meetings in Spain.
- In short, the development of the IEEE Spain section was/is parallel to development of Spain as country with a high social, economical and technical level today.

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